

4.12.3.1 Potential Impact Reduction (Mitigation) Measures

It should be noted that the six KOPs developed for this analysis do not address all of the possible impacts of the alternates, but rather, are examples of specific types of impacts. The following impact reduction/mitigation measures may be considered by the Department to address those impacts resulting from changes to landform, vegetative modifications and proposed structures. These measures will be considered where the proposed construction does not meet the visual resource class objectives.

Plates 1 through 5 present examples of various slope and rock face treatments that may be considered as land form disturbance visual reduction or mitigation. Plate 1 depicts a typical rock cut for a roadway section.

1. Landforms

A basic consideration in reducing visual impacts of roads is the minimizing of landform disturbances and contrasts. Almost without exception, landforms must be disturbed to provide essentially flat cross-sections for the roadway. The only practical alternatives are elevated structures above the landform or tunnels below. The objective of landform impact reduction is to make terrain alterations blend better with existing slopes.

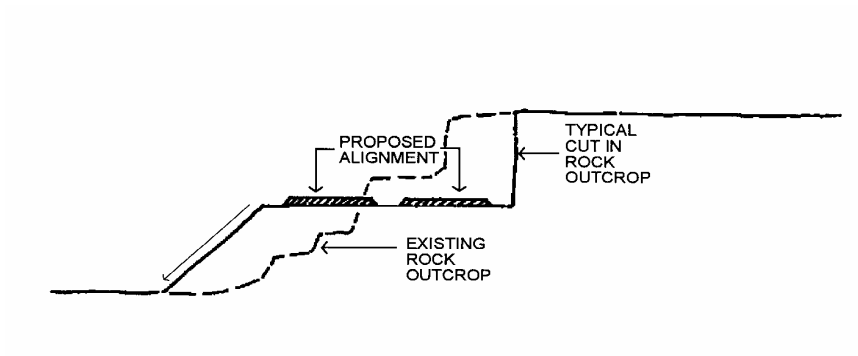


Plate 1: Typical Rock Cut

Retaining Large Rocks in Cut Slopes

Rock outcrops or large stable boulders found in the excavation of cut slopes would be retained in place where possible. This would provide for a more natural appearance by extending natural landforms into the disturbed landscape as shown in Plate 1. Plate 2 illustrates a typical slope rock cut that might occur within the project area. The angular and finished nature of the cut produces contrast.

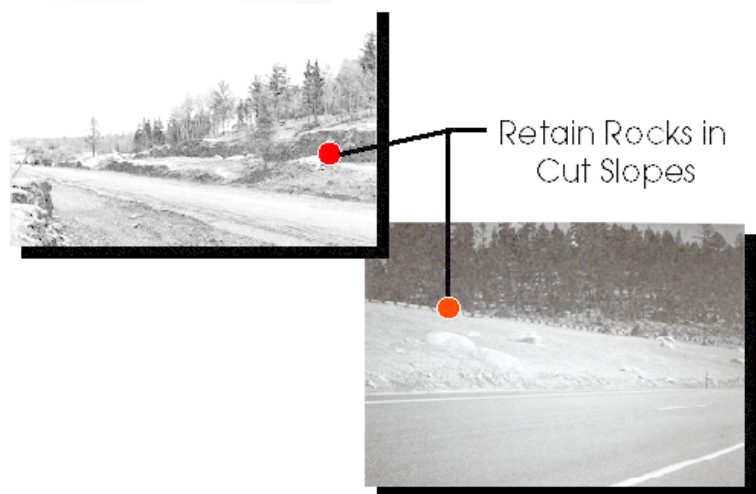


Plate 2: Examples of Retaining Rocks in Cut Slopes

Broken Face Blasting

Where practical and feasible, roadway design would incorporate a broken-faced rock cut effect in areas where it would blend in. Minimal manicuring of rock cuts would be encouraged to allow for rough texture with interplay of light and shadow. This will also provide planting pockets in the rocks that will allow more rapid revegetation for additional texture and color as shown in Plate 3.

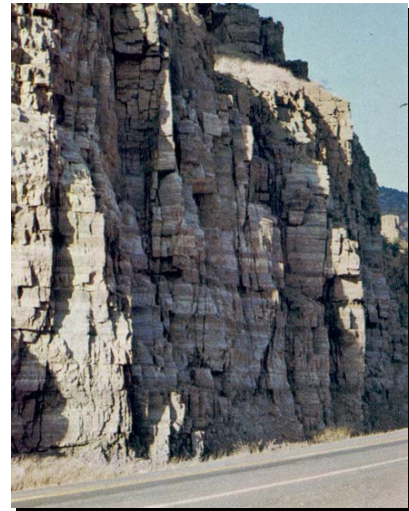


Plate 3: Broken Face Rock Blasting

Minimal Disturbance of the Hydrologic Regime

Since road construction can intercept surface and subsurface water flows, the downhill side of the clearing limits can experience either a reduced or increased water supply to the root systems. One of the best methods to avoid such drastic changes in water supply is to carry water off the slope at minimal intervals to more nearly duplicate the natural flows present before soil disturbance. The use of terraced slopes provides opportunities to reduce surface runoff. Where deemed practical and appropriate, these design features may be incorporated into the final design to maintain historic flows.

Reducing the Contrasts of Large Fill Slopes

Plate 4 illustrates the potential of techniques like slope rounding, maintaining rock outcrops and slope scarification. These grading techniques can be used (as opposed to finely tuned finished grading) in reducing the contrasts in cut slopes.

Scarification involves the potential use of more naturalistic irregularities rather than smooth and consistent slopes.

Slope rounding breaks up the sharp, unnatural edges of a constant pitch, cut/fill slope by blending the slope with existing natural landforms. A further refinement of slope rounding is to vary the pitch of cut and fill slopes to form a more naturalistic slope than the typical 3:1 constructed slope.

Incorporating existing rock outcroppings is another technique used to reduce contrast by minimizing the grading required to remove large rocks and boulders from a cut.

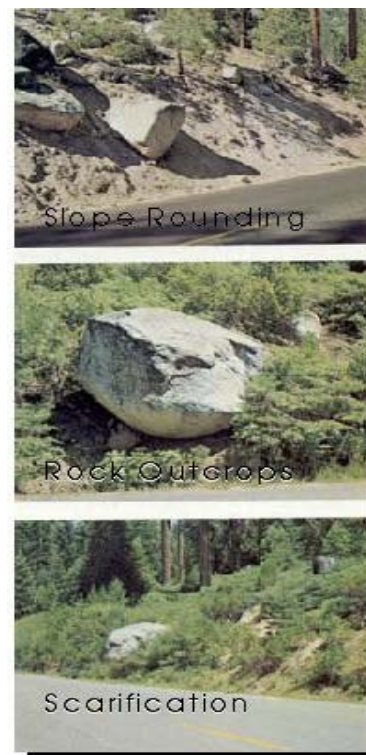


Plate 4: Examples of Various Slope Treatments



Reducing Color and Texture Contrast

Since textural and color contrast is the most noticeable result of disturbed slopes in road cuts and fills (as depicted in Plate 5), it presents possibilities for visual impact reduction. Plate 6 illustrates that an asphalt emulsion may be used on rock cuts to blend the newly exposed rock into the surrounding landscape.



Plate 5: Color Contrast From Rock Cut



Plate 6: Color Contrast Controlled by Asphalt Emulsion

Vegetative Modifications

There are several options that can be considered to reduce contrast in vegetation modification activities. To improve the visual appropriateness of vegetative change, the following mitigation measures may be utilized in the western portion of the project area where the greatest amount of vegetation would be affected.

Native Plant Revegetation

Encouraging mixtures of native plants rather than single-species plantings will lessen the degree of contrast. The top picture in Plate 7 depicts a mixture of coniferous and deciduous trees that help to lessen contrast.

The middle picture of Plate 7 illustrates the use of native vegetation to revegetate fill slopes and disturbed areas. Note the use of multiple layers of native plant material help blend the steep slope and that native grasses are used on the difficult to mow slopes.



Plate 7: Examples of Vegetative Modifications